

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-20 were pending in this application. By way of this reply, claims 3 and 11 have been cancelled, and the limitations of the cancelled claims have been incorporated into claim 1. Therefore, claims 1-2, 4-10, and 12-20 are currently pending. Claim 1 is independent. The remaining claims depend, either directly or indirectly, from independent claim 1.

Claim Amendments

Claims 4, 8, 12, and 13 have been amended to clarify the claim language or correct informalities. Further, all pending claims have been amended to clarify that the optical component is composed of a crosslinked and cured resin product. These amendments can be supported, for example, in paragraph [0032] of the published application. Also, claim 1 has been amended to recite a crosslinkable fluorine-containing monomer composition. These amendments can be supported, for example, in paragraphs [0021] and [0034] of the published application. No new matter has been added by this reply.

Rejection(s) under 35 U.S.C. § 112

Claims 8 and 13 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. By way of this reply, claims 8 and 13 have been amended to address the concerns raised by the Examiner. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C. § 102

Claims 1, 3-10, 13, and 19-20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2003/0198854 ("Watakabe"). By this reply, claims 1, 3-10, 13, and 19-20 have been amended. To the extent this rejection still applies to the amended claims, the rejection is respectfully traversed.

Embodiments disclosed in this application are directed to optical plastic components that can be used in optical fiber communication devices. Specifically, the present application discloses crosslinkable polymers made from a characteristic composition of monomers, thereby providing plastic optical components having better processabilities. In particular, because curable polymers are employed in the claimed invention, the polymers structurally form three-dimensional crosslinkages, and this structure can contribute to the better processabilities of the polymers.

Accordingly, amended independent claim 1 requires, in part, a crosslinkable fluorine-containing monomer composition containing a perfluorocyclohexane ring and one or more radical polymerization groups by radical polymerization, wherein the radical polymerization group is an acryloyloxy or methacryloyloxy group.

Watakabe relates to a polymer electrolyte fuel cell having a membrane-form polymer electrolyte. Watakabe discloses block copolymers having two combinations from three different segments. That is, Watakabe shows block copolymers having segment A, which is made from perfluoro(alkyl vinyl ether) having SO_{2X} , segment B, which is made from cyclopolymerizable

perfluorinated monomer, and segment C, which is a copolymer of tetrafluoro ethylene and perfluoro(alkyl vinyl ether). Watakabe suggests two kinds of block copolymers, *i.e.*, copolymers having segments A and B, or A and C. Therefore, the polymers of Watakabe are completely different from the polymers of the claimed invention, as further explained below.

In terms of monomer, Watakabe employs perfluoro(alkyl vinyl ether) having SO_2x , cyclopolymerizable perfluorinated monomer, and tetrafluoro ethylene and perfluoro(alkyl vinyl ether) monomer. Therefore, Watakabe fails to show or suggest using monomers having a perfluorocyclohexane ring and an acryloyloxy or methacryloyloxy group. Watakabe uses perfluoromonomer and monomers having $\text{CF}_2=\text{CF}$ -group, but is silent as to monomers containing a perfluorocycloheane ring or acryloyloxy/methacryloyloxy group (*see* Watakabe, paragraphs [0039], [0043], [0051], etc.).

Further, in terms of polymer structure, Watakabe simply suggests a block copolymer having three different kinds of segment. From the description of Watakabe, it is clear to one of ordinary skill in the art that the block copolymers of Watakabe are merely in linear form, but not in three-dimensionally cured form. Therefore, the polymers of Watakabe are also different structurally from the claimed invention.

In view of the above, Watakabe fails to teach or suggest all limitations of amended independent claim 1. Therefore, independent claim 1 is patentable over Watakabe. Dependent claims are patentable over Watakabe for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C. § 103*Claims 2 and 17-18*

Claims 2 and 17-18 stand rejected under 35 U.S.C. § 103(a) as being obvious over Watakabe in view of U.S. Patent No. 3,868,408 ("Holland"). By this reply, claims 2 and 17-18 have been amended. To the extent this rejection still applies to the amended claims, the rejection is respectfully traversed.

As discussed above, Watakabe fails to teach or suggest all limitations of independent claim 1. Further, Holland does not teach that which Watakabe lacks with respect to claim 1. Specifically, the Examiner has asserted that Holland shows one or more perfluorocyclohexane rings in col. 2, lines 37-38. However, considering that Holland further discloses b is either 0 or 1 (see col. 2, line 39), the perfluorocyclohexane rings of Holland are not used as monomers to form a polymer with. As such, like Watakabe, Holland is silent with respect to at least a crosslinkable fluorine-containing monomer composition containing a perfluorocyclohexane ring and one or more radical polymerization groups by radical polymerization, wherein the radical polymerization group is an acryloyloxy or methacryloyloxy group. In view of the above, claims 2 and 17-18, which depend from independent claim 1, are patentable over Watakabe and Holland, whether considered separately or in combination. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 11, 12, and 14

Claims 11, 12, and 14 stand rejected under 35 U.S.C. § 103(a) as being obvious over Watakabe in view of U.S. Patent No. 6,747,179 ("DeSimone"). By this reply, claim 11 has been

cancelled, thereby rendering this rejection moot with respect to the claim. Claims 12 and 14 have been amended. To the extent this rejection still applies to the amended claims, the rejection is respectfully traversed.

As discussed above, Watakabe fails to teach or suggest all limitations of independent claim 1. Further, DeSimone does not teach that which Watakabe lacks with respect to claim 1. Specifically, DeSimone only relied upon for teaching a fluorinated acrylate monomer. However, like Watakabe, DeSimone is silent with respect to at least a crosslinkable fluorine-containing monomer composition containing a perfluorocyclohexane ring and one or more radical polymerization groups by radical polymerization, wherein the radical polymerization group is an acryloyloxy or methacryloyloxy group.

In addition, the Applicant notes that Watakabe teaches away from using polymers having hydrogens, which include a (meth)acryloyloxy group, in the resin.

[0037] The cathode resin in the present invention comprises segments A and B. Both segments A and B are preferably made of polymers in which *all hydrogen atoms are substituted by fluorine atoms* (except for $-\text{SO}_{2X}$ groups) (which will be referred to as perfluoropolymers in this specification) from the viewpoint of the practical durability of the fuel cell. (emphasis added)

That is, even if DeSimone disclosed a methacryloyloxy group as a radical polymerization group, one of ordinary skill in the art would never have applied the methacryloyloxy group containing hydrogen atoms to the copolymer of Watanabe.

In view of the above, claims 12 and 14, which depend from independent claim 1, are patentable over Watakabe and DeSimone, whether considered separately or in combination. Accordingly, withdrawal of this rejection is respectfully requested.

Claim 15-16

Claims 15-16 stand rejected under 35 U.S.C. § 103(a) as being obvious over Watakabe in view of U.S. Patent Application Publication No. 2003/0026574 (“Suzuki”). Claims 15-16 have been amended by this reply. To the extent this rejection still applies to the amended claims, the rejection is respectfully traversed.

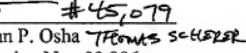
As discussed above, Watakabe fails to teach or suggest all limitations of independent claim 1. Further, Suzuki does not teach that which Watakabe lacks with respect to claim 1. Specifically, Suzuki only relied upon for teaching an optical waveguide. However, like Watakabe, Suzuki is silent with respect to at least a crosslinkable fluorine-containing monomer composition containing a perfluorocyclohexane ring and one or more radical polymerization groups by radical polymerization, wherein the radical polymerization group is an acryloyloxy or methacryloyloxy group. In view of the above, claims 15 and 16 which depend from independent claim 1, are patentable over Watakabe and Suzuki, whether considered separately or in combination. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 04473/005001).

Dated: September 7, 2007

Respectfully submitted,

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Attachments